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Physicians' and Nurses' Satisfaction With the Clinical Laboratory Service of Gondar University Hospital, Northwest Ethiopia

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Key Words: Customer satisfaction; Laboratory service; Quality improvement

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ABSTRACT

Objectives: *To assess physicians' and nurses' satisfaction with the service provided by the laboratory at Gondar University Hospital.*

Methods: *We conducted a cross-sectional study involving 196 nurses and physicians.*

Results: *Overall level of satisfaction was 51.1% for nurses and 51.5% for physicians. Lack of consistency in the quality of laboratory work, absence of a timely report of critical values, test turnaround time, acceptability of results released, and reporting of reference ranges with test results were areas mentioned as sources of dissatisfaction.*

Conclusions: *The study showed wide room for improvement. In addition to taking intervention, root causes of dissatisfaction need to be investigated and means of improving the satisfaction level should be designed and implemented.*

Upon completion of this activity you will be able to:
- describe international standards related to clinical laboratory service.
- list the tools important for improvement of clinical laboratory service quality.
- describe the responsible bodies for clinical laboratory quality improvement.

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Questions appear on p 439. Exam is located at www.ascp.org/ajcpcme.

Client satisfaction is considered one of the desired outcomes of health care, and it is directly related to use of health services.[1] Satisfaction with perceived service quality tends to influence utilization of service as well as compliance with practitioner recommendation.[2] Therefore, monitoring customer satisfaction is an important and useful quality improvement tool for clinical laboratories and health care organizations.[3]

Quality standards, such as ISO 15189 and ISO/IEC 17025, and the balanced score card stress the importance of the systematic use of customers' perspectives in clinical laboratories. Both the ISO 15189 and ISO/IEC 17025 standards encourage an investigative process to search continuously for causes behind processes that deviate from procedures or are not satisfactory to customers so that proper corrective and preventive action can be initiated.[4]

Measurement of customer satisfaction brings customer preferences into the quality assessment process and corrects for mistaken assumptions about which particular aspects of service customers value most.[5,6] These measurements have also been instrumental in helping government agencies identify target groups, clarify objectives, define measures of performance, and develop performance information systems.[7] Physicians and nurses are among the primary customers of laboratory services, and obtaining their feedback provides laboratory managers with opportunities to identify areas for improvement. Hence, the aim of this study was to assess physicians' and nurses' satisfaction with the service provided by the laboratory at Gondar University Hospital in northwest Ethiopia.

Materials and Methods

Study Setting

The study was conducted in the laboratory service department at Gondar University Hospital, a tertiary-level teaching hospital that serves around 4 million people from the surrounding zones and nearby regions. The university hospital provides surgical, medical, pediatric, gynecologic, obstetric, and ophthalmologic services to the community in addition to training students, conducting research, and providing outreach services (community service). The hospital has a regional-level laboratory with 7 sections and a separate reception room. According to a report conducted 1 year before the study, the annual volumes of samples received in each laboratory were as follows: 9,960 for urinalysis, 14,800 for clinical chemistry, 8,000 for serology, 11,520 for hematology, 9,600 for microbiology, 9,000 for parasitology, and 10,200 for antiretroviral therapy. The overall workflow of the laboratory is partially computerized—that is, physicians order tests on preprinted paper ordering slips, and as orders arrive in the laboratory, they are registered in the computer system. Computer-printed results are taken by porters to the office of each physician. Urgent tests are labeled "urgent" on the request and processed first. However, there is no way of communicating the results in a more direct way unless the requesting physician asks for the information.

During the study period, the laboratory was recognized as a 3-star-level laboratory in the World Health Organization Regional Office for Africa accreditation system, which is stepwise recognition of evolving fulfillment of the ISO 15189 standard.[8] A questionnaire-based cross-sectional study was conducted from March 1 through March 25, 2012. A total of 131 nurses and 64 physicians were randomly selected to participate in the study.

Data Collection and Analysis

Data were collected through a paper-based self-administered questionnaire that contained both closed- and open-ended questions. The questionnaire had a total of 20 questions, including those on sociodemographic characteristics of the participants (4 questions), level of satisfaction (10 questions), and possible factors related to satisfaction (6 questions). The questions used to assess the level of satisfaction were analyzed using a 5-point Likert scale (1 = strongly dissatisfied to 5 = strongly satisfied). Respondent satisfaction scores given for the items under each component were averaged to create a mean satisfaction score; for analytical purposes, scores equal to and above the mean were taken as an indicator of users' perceived satisfaction. Data were double entered and analyzed with SPSS version 16 computer software (SPSS, Chicago, IL). Results were summarized as percentages and frequencies and presented in graphs and tables.

Ethical Consideration

Ethical clearance was obtained from the ethical review committee of the School of Biomedical and Laboratory Sciences, University of Gondar. Informed consent was obtained from each respondent, and confidentiality was maintained throughout the study.

Results

The survey was distributed to 69 physicians and 134 nurses, of whom 64 (92.8%) physicians and 131 (97.8%) nurses responded, giving an overall response rate of 96.1%. The sex distribution of the participants included 99 men and 96 women. The age of the study participants ranged from 19 to 47 years, with a mean age of 25 years. The participants served the hospital for a minimum of less than 2 years and a maximum of greater than 11 years, with the majority (69.7%) serving 0 to 2 years **Table 1**.

Overall, 51.3% of the study participants were satisfied with the activities of the laboratory. The level of satisfaction across the 2 professions was similar: 51.1% for nurses and 51.5% for physicians. **Table 2** presents laboratory service satisfaction differences between physicians and nurses. Sixty-seven percent of the physicians were dissatisfied with the quality of work, 50% with the availability of requested tests, 48% with the reporting of reference ranges, 48% with the clinician handbook, and 44% with the timely reporting of critical values. On the other hand, nurses were dissatisfied with the accessibility of laboratory results (58%), the compatibility of laboratory results with the patient's condition (51%), the reporting of reference ranges (46%), and the quality of the laboratory work (44%). Turnaround time was mentioned as an area of dissatisfaction by

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Table 1
Characteristics of Physicians and Nurses Who Participated in the Study

Variable	No. (%)
Profession	
Physicians	64 (32.8)
Nurses	131 (67.2)
Sex	
Male	99 (50.8)
Female	96 (49.2)
Age, y	
20-30	184 (94.4)
31-40	9 (4.6)
41-50	2 (1.0)
Service, y	
0-2	136 (69.7)
3-5	49 (25.1)
6-8	8 (4.1)
>9	2 (1.0)

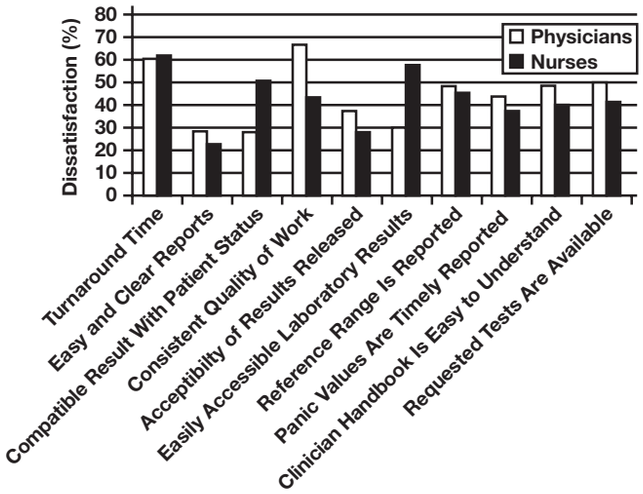

Figure 1 Physicians' and nurses' dissatisfaction with the laboratory service at Gondar University Hospital.

61% of physicians and 62% of nurses **Figure 1**. Of note, physicians were more satisfied with the ease and clearness of reports and the ease in understanding the clinician handbook but were statistically more dissatisfied with the compatibility of results with the patient's condition and the consistent quality of the laboratory work.

Participants of this study were also asked to respond to 6 questions expected to have an association with satisfaction. Accordingly, 86.7% have faced lost laboratory results, 66.7% responded that the numbers of laboratory personnel are not proportional to the workload of the laboratory, and 62.6% stated that laboratory personnel are not available to answer

Table 2
Satisfaction Level of Physicians and Nurses at Gondar University Hospital With the Service Delivered by the Laboratory, 2012

Variable	Satisfied, No. (%)	Not Satisfied, No. (%)	χ^2 (*P* Value)
Routine turnaround time			
Nurses	50 (38.2)	81 (61.8)	0.01 (.90)
Physicians	25 (39.1)	39 (60.9)	
Easy and clear laboratory reports			
Nurses	62 (47.3)	69 (56.7)	22.4 (<.001)
Physicians	53 (82.8)	11 (17.2)	
Compatible results with patient condition			
Nurses	64 (48.8)	67 (51.2)	6.46 (<.01)
Physicians	19 (29.6)	45 (70.4)	
Easily accessible laboratory results			
Nurses	55 (41.9)	76 (58.1)	1.04 (.31)
Physicians	22 (34.4)	42 (65.6)	
Availability of requested laboratory tests			
Nurses	76 (58)	55 (42)	1.1 (.29)
Physicians	32 (50)	32 (50)	
Easy to understand clinician handbook			
Nurses	42 (32)	89 (68)	6.9 (<.01)
Physicians	33 (51.6)	31 (48.4)	
Consistent quality of work			
Nurses	74 (56.5)	57 (43.5)	9.65 (<.01)
Physicians	21 (32.8)	43 (67.2)	
Accessibility of results released			
Nurses	94 (71.8)	37 (28.2)	1.73 (.19)
Physicians	40 (62.5)	24 (37.5)	
Reference range reported			
Nurses	71 (54.2)	60 (45.8)	0.12 (.73)
Physicians	33 (51.6)	31 (48.4)	
Panic values reported in time			
Nurses	49 (37.4)	82 (62.6)	0.72 (.39)
Physicians	28 (43.7)	36 (56.3)	

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their questions. Of the factors we investigated, only laboratory management's concern with providing good customer service showed a statistically significant association ($\chi^2 = 12.37$, $P < .001$) with satisfaction **Table 3**.

Discussion

In Ethiopia in general and in the study area in particular, studies that try to assess the satisfaction of health professionals regarding clinical laboratory services are very limited or absent.

In this study, half of the nurses and physicians in the hospital were satisfied with the overall service delivery of the laboratory. This result was less than that reported in Tanzania, where 75% of the health personnel were satisfied with the laboratory service.[9] The difference may be attributable to the variation in the areas covered by the study, with the Tanzanian study involving about 8 laboratories both from private and public sectors. In our study, the level of satisfaction for nurses was 51.1%, which was less than that reported from the United States, in which 76% of nurses were usually satisfied (mean Likert scale score, 3.5 out of 5).[3] The difference may be the small sample size used in our study and also the difference in the level of laboratories under investigation.[3] Even though the level of satisfaction was different, areas of most dissatisfaction were similar. The turnaround time was mentioned as one area of dissatisfaction. A College of American Pathologists' Q-Probe study of satisfaction in the United States commented that turnaround time is an area of dissatisfaction.[5] It is interesting to note that even with a computerized system such as that used in the United States, physicians will find that results do not reach the chart as fast as they would like.[5] This indicates that, even though improving the turnaround time is not a simple task, more work has to be done in the area since clinicians judge the adequacy of laboratory services by the speed with which results are reported, as indicated by other studies.[4,10,11] Moreover, turnaround time is one of the most noticeable aspects of laboratory service and is often used as a key performance indicator.[12] In our study, a statistically significant different level of satisfaction was demonstrated between nurses and physicians with regard to easy and clear reports, compatibility of results with patient status, an easily understandable clinician handbook, and consistency of quality of laboratory work. This difference may be due to the knowledge difference between the 2 professions, which can be an important target area of intervention to improve the satisfaction level. Involvement of laboratory personnel in physician and nursing rounds and sessions should strengthen communication with both groups and foster an understanding of what the laboratory does.

According to the results of this study, most (86.7%) physicians and nurses have encountered the loss of laboratory result reports. This loss of results may be caused by the manual nature of the process because results are still given to the clinicians by human transporters and because the laboratory information system is not linked to the clinicians. Although statistical analysis could not show a significant association between loss of results and level of satisfaction, loss of results may be a possible cause of

Table 3
Responses Given by Physicians and Nurses on Possible Causes of Dissatisfaction and Association With Level of Satisfaction

Variable	Level of Satisfaction		
	Satisfied, No. (%)	Not Satisfied, No. (%)	χ^2 (*P* Value)
Lost laboratory result			
Yes	86 (50.9)	83 (49.1)	0.08 (.84)
No	14 (53.8)	12 (46.2)	
Number of laboratory personnel proportional with workload			
Yes	38 (58.5)	27 (41.5)	2.01 (.17)
No	62 (47.7)	68 (52.3)	
Laboratory personnel competent enough in their professional skill			
Yes	49 (59)	34 (41)	3.84 (.08)
No	51 (45.5)	61 (54.5)	
Management of laboratory concerned with providing good customer service			
Yes	73 (61.3)	46 (38.7)	12.37 (<.001)
No	27 (35.5)	49 (64.5)	
Laboratory personnel are available to answer questions			
Yes	35 (53)	31 (47)	0.12 (.76)
No	65 (50.4)	64 (49.6)	
Laboratory personnel act in a professional manner			
Yes	44 (60.3)	29 (39.7)	3.78 (.06)
No	56 (45.9)	66 (54.1)	

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dissatisfaction that will also compromise the maximum care that can be provided to patients. To improve this situation, attention should be given to linking the laboratory information system with clinicians. On the other hand, commitment of the laboratory managers to improve customer satisfaction has had a positive impact on the satisfaction level of physicians and nurses, as shown by our study.

At a time when clinicians have more options for their diagnostic testing, a laboratory cannot afford to have unhappy customers. The laboratory needs to manage clinician expectations and demonstrate that it is meeting those expectations. Our survey demonstrates that the laboratory needs to improve in a wide variety of areas as well as engage physicians and nurses in the process. We believe that a stronger managerial orientation should be introduced in the laboratory to help deliver quality services and improve clinician satisfaction. But this will not be a 1-step activity and responsibility of the laboratory personnel only; the clinicians also have an important role in developing improvements based on consensus with laboratory personnel. Having defined areas of dissatisfaction provides the laboratory management with opportunities for improvement, even though our study was limited to the questions surveyed. Further research to understand the root causes of customer dissatisfaction in the laboratory is warranted to improve the quality of the laboratory.

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